Math 270 HW#15

Name:_____ Date:_____

Show your work very clearly, neatly, and box your final answer.

One Side Only

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1) Let $W = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} : a,b,c,d \in \Re, \text{and } a+d=0 \right\}$. Determine if W is a subspace of $\mathrm{M}_{2,2}$ with standard matrix operations.

3. Let $W = \left\{ \begin{bmatrix} a & b \\ c & d \end{bmatrix} : a,b,c,d \in \Re, \text{and } a+d=1 \right\}$. Determine if W is a subspace of $\mathrm{M}_{2,2}$ with standard matrix operations.

4. Find the length of the vector $u = (2,-4,5,0,2)$.

5. Find a unit vector in the opposite direction of the vector $(1,0,-2,2)$.

6. Given: $u = (3,4)$ and $v = (7,1)$, find:

a) $u \bullet v$ **b)** $\|u\|$ **c)** $\|v\|$

d) $\cos\theta$, where θ is the angle between the two vectors.

e) the angle between the vectors to the nearest degree.

7. Repeat problem 6 for vectors $u = (1,-1,1,0,1)$ and $v = (1,0,-1,0,1)$.